

Inserting battery pack into real time viewer

1. Open the battery pack slot cover by sliding it in the direction of the arrow (see Figure 5.23 (b)).

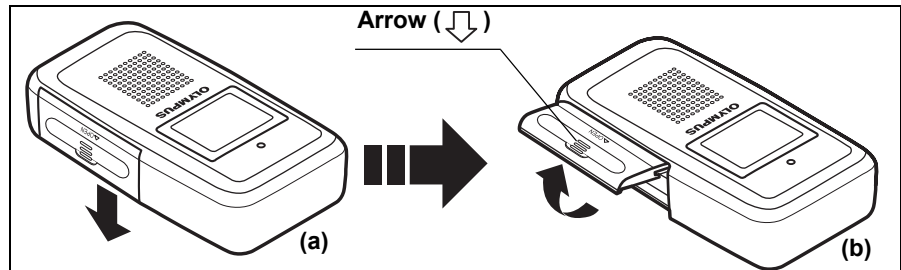


Figure 5.23

2. With the battery pack removal ribbon hanging out of the battery pack slot, insert a fully charged battery pack into the slot (see Figure 5.24 (b)).

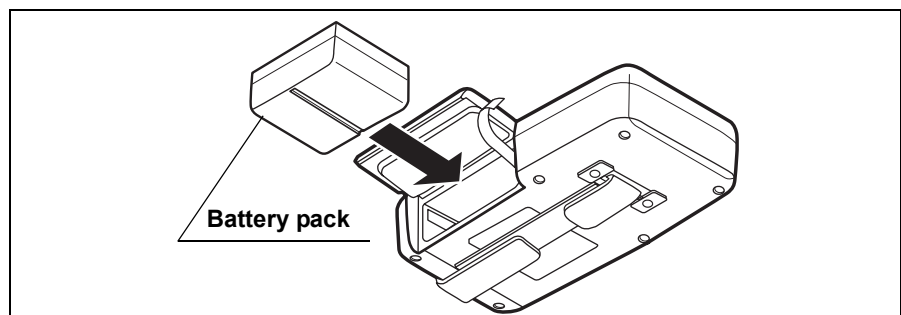


Figure 5.24

3. Close the battery pack slot cover, taking care not to catch the battery pack removal ribbon, and then slide the cover upward to lock it (see Figure 5.25 (b)).

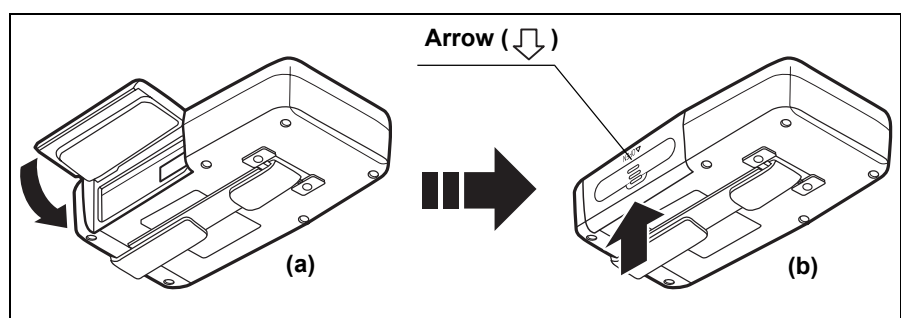


Figure 5.25

5.6 Attaching the equipment to the patient

Patient confirmation

Before attaching the antenna lead set to the patient, confirm the patient's identity. Also confirm that the patient has not eaten or drunk for at least 8 hours before the examination.

Confirmation of antenna locations (and shaving, if necessary)

1. Ask the patient to lie down with his upper body exposed, and to lower his pants or skirt.
2. Referring to the provided template "Antenna locations guide", identify the 8 antenna locations on the patient, and determine if the locations require shaving.
3. If there is too much hair in a particular location to securely adhere the antenna lead cover, shave as necessary.

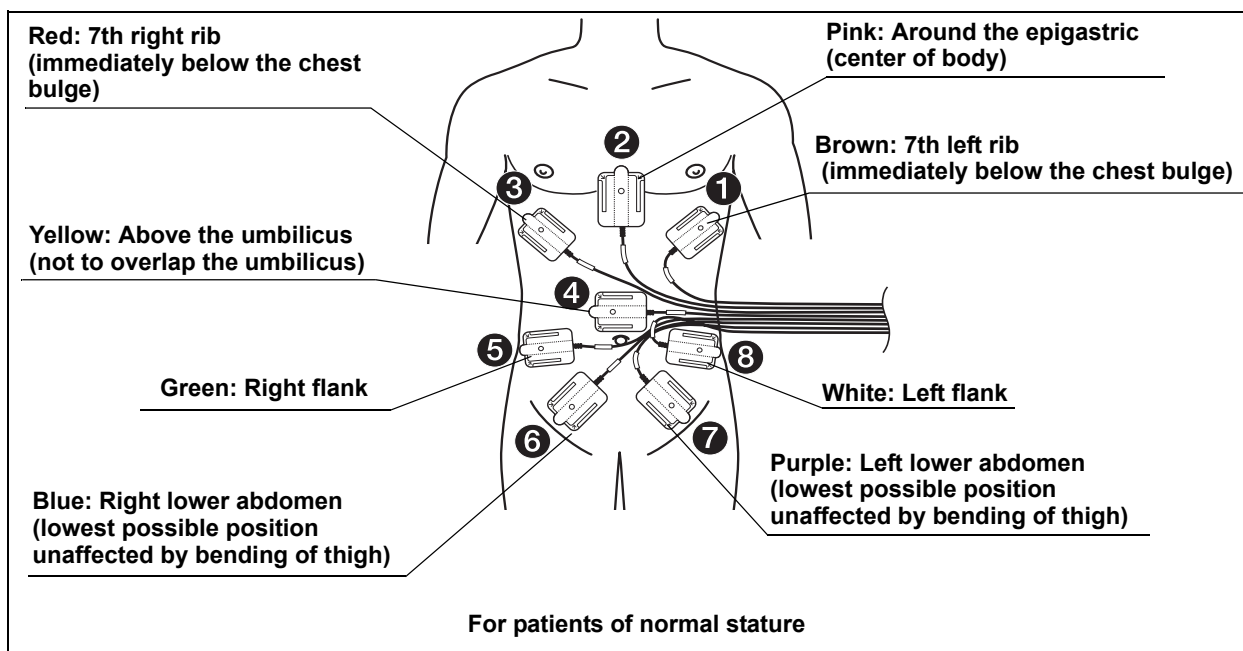


Figure 5.26

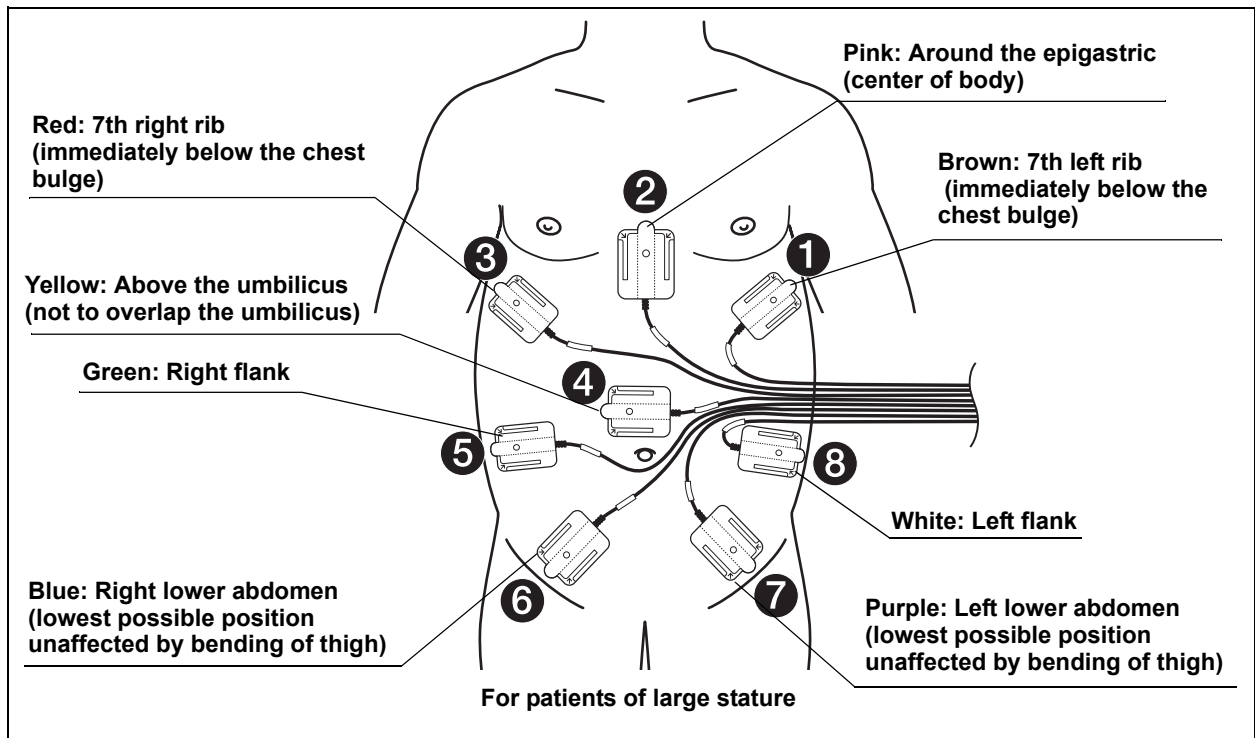


Figure 5.27

CAUTION

When attaching the antenna pads, position the cables so that they do not overlap with the antenna pads. Otherwise, noise may appear in the images.

Attaching the antenna lead cover

CAUTION

Before attaching the antenna lead cover to the antenna pad, check that the antenna pad has not been folded or creased, and that the antenna cable is free of significant deformation or abnormalities.

1. Insert the antenna into the antenna lead cover so that its color tag is on the same side as the blue surface of the antenna lead cover, then align their holes (see Figure 5.28).

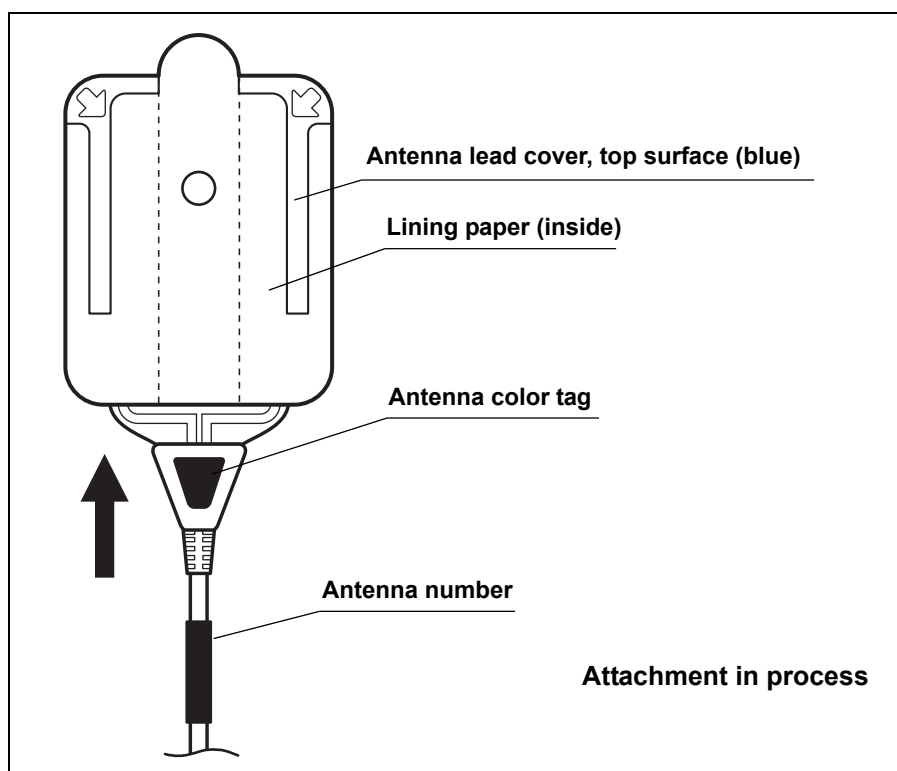


Figure 5.28

2. Align the hole on the center of the antenna pad to the hole on the center of the antenna lead cover. Peel off the lining paper from the inside of the antenna lead cover (on the blue side), and adhere the antenna pad securely to the antenna lead cover (see Figure 5.29).

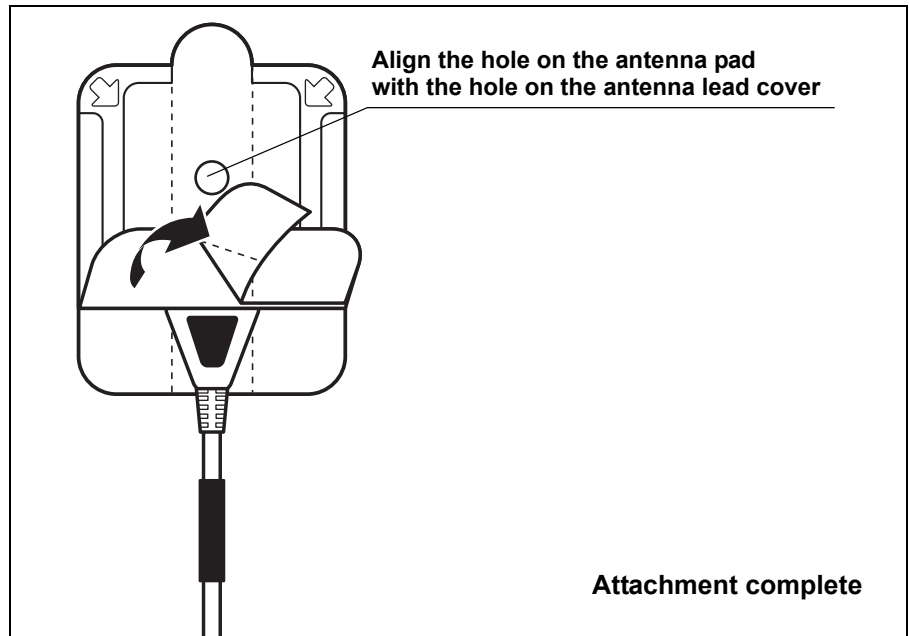


Figure 5.29

Attaching the antennas to the patient

CAUTION

Make sure that the antenna pads are attached firmly to the antenna lead cover, and that the antenna lead cover are attached firmly to the patient. Otherwise, noise may appear in the images, or the images may not be transmitted properly.

1. Dry the patient's body by wiping with a dry piece of gauze.
2. Place the antenna pads on the patient so that their numbering matches the Antenna Locations Guide (see Figure 5.26). Starting with antenna pad ②, remove the lining paper on the back of the antenna lead cover by peeling from the point indicated by the arrow (see Figure 5.30), and then press down firmly on the antenna pad to attach it to the patient.

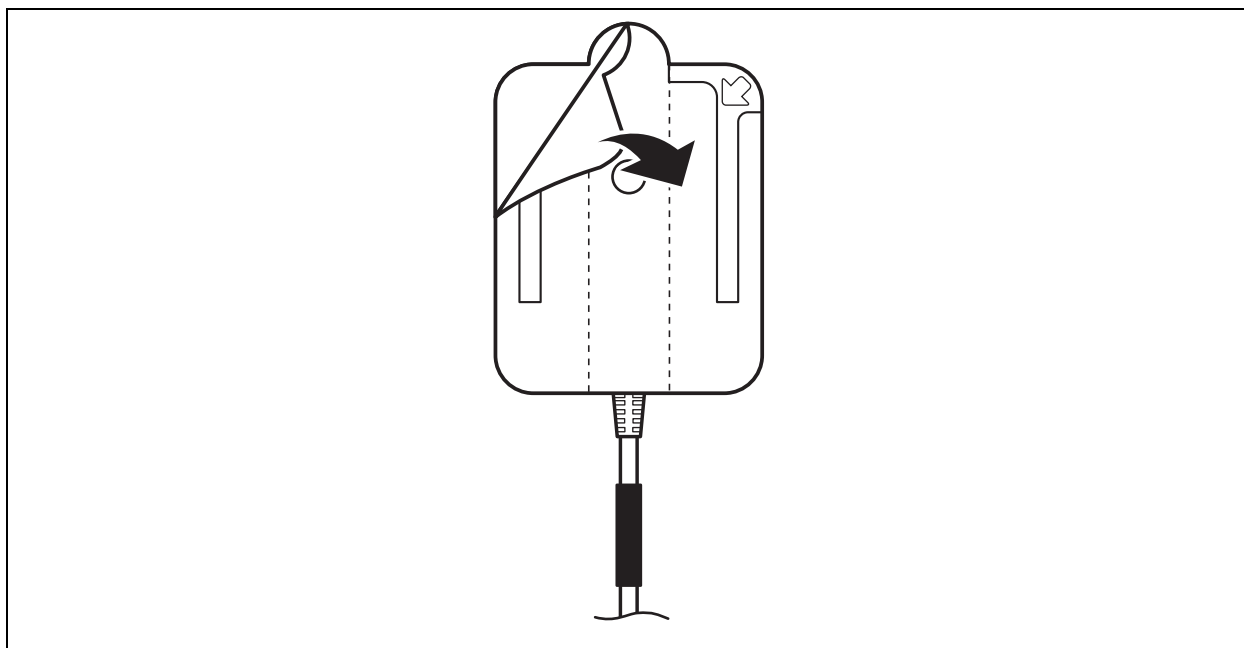


Figure 5.30

3. Ask the patient to get off the bed, to move around slowly, then sit on the bed again. While making sure that all antennas are securely attached, have the patient check for any skin discomfort caused by the attached antennas. If the patient experiences discomfort, replace the antenna lead cover with a spare, and reattach the antenna.

CAUTION

- Once used, the antenna lead cover loses adhesion. Please replace the antenna lead cover if reattaching the antenna.

- Be sure to use the antenna covers when attaching the antennas. Failure to do so may prevent the proper reception of small bowel capsule endoscopic images.
- Perform the examination with all 8 antenna pads attached to the patient. The examination may fail with even one antenna pad not properly attached.
- Do not allow the antenna cable to lay on or near the antenna pads. It may prevent the proper reception of capsule endoscopic images.
- Do not use an antenna pad that has been completely folded. Its reception performance may be degraded, causing noise to appear in the transmitted images.

4. Have the patient get dressed, letting the antenna lead set protrude to the left of his/her abdomen (see Figure 5.31).

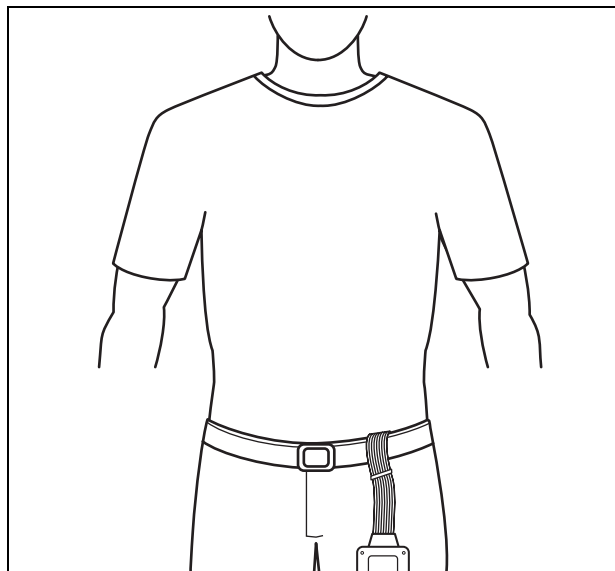


Figure 5.31

5. Have the patient wear the suspender.

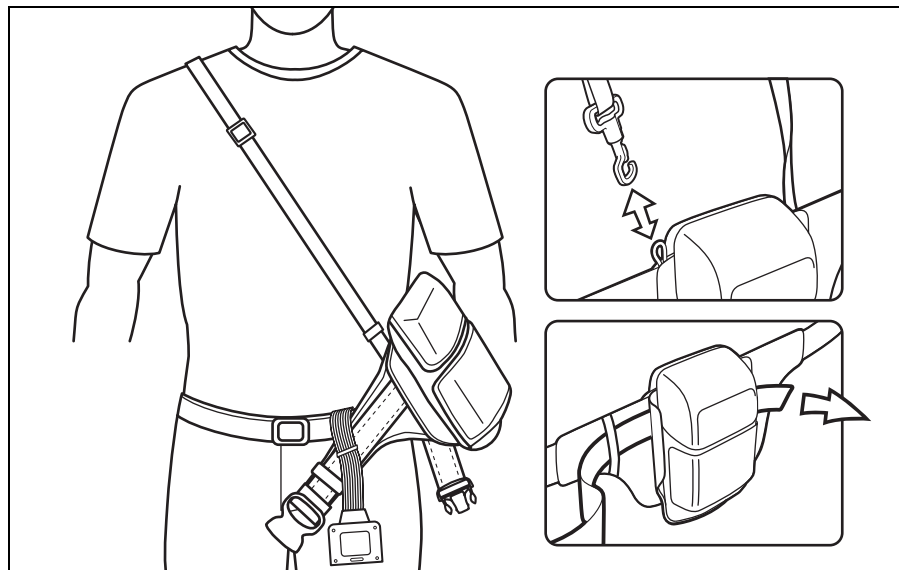


Figure 5.32

NOTE

- The suspender can be released on one of its ends.
- Pass the loose end of the belt between the belt and the pouch to keep it out of the way.

Connecting and testing the recorder unit and the antenna lead set

1. Connect the antenna lead set to the recorder unit by inserting the connection unit into the recorder unit until they click (see Figure 5.33).

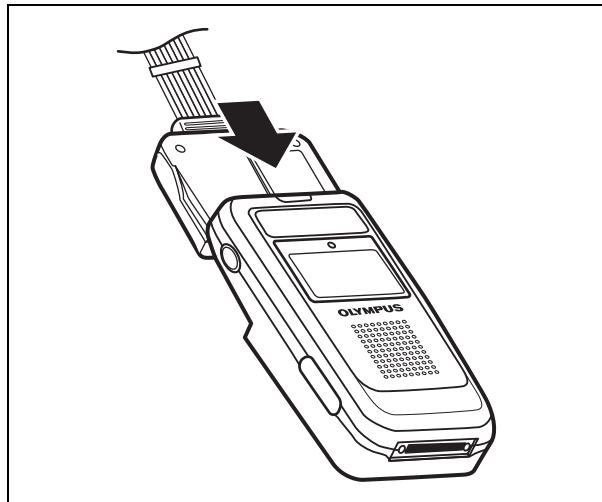


Figure 5.33

2. Hold down the recorder unit's power switch for at least 1 seconds to turn ON the recorder unit.

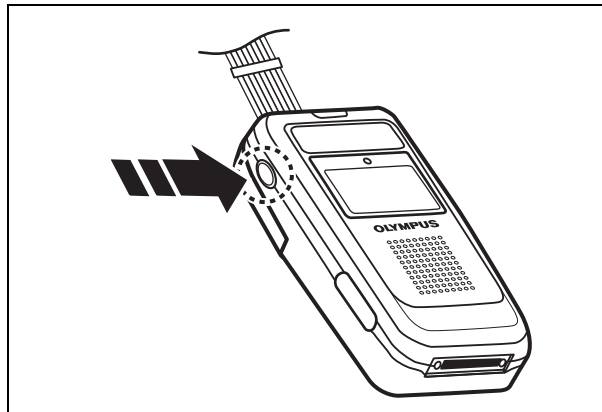


Figure 5.34

3. The Olympus logo is displayed again, and the indicator lamp illuminates in yellow for 2 seconds.

- The following information display screen (see Figure 5.35) is displayed on the recorder unit's display panel, and the indicator lamp illuminates in green.

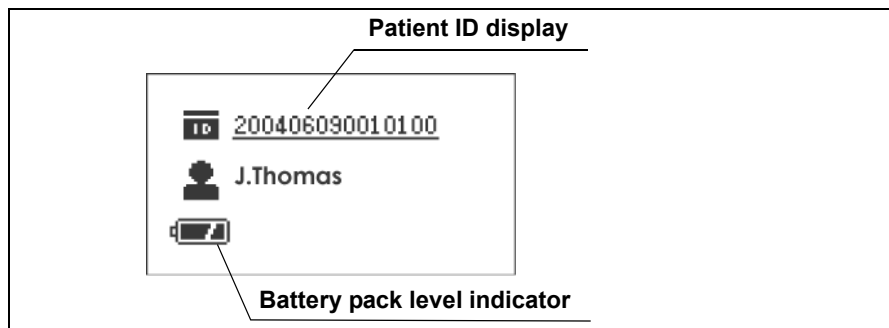




Figure 5.35

CAUTION

- If the indicator on the battery pack changes from  to  prior to the examination, recharge the battery pack, or replace with a fully-charged battery pack.
- If an error is detected while turning the recorder unit ON, the recorder unit's indicator lamp will blink yellow. With the lamp blinking yellow, the examination cannot start.

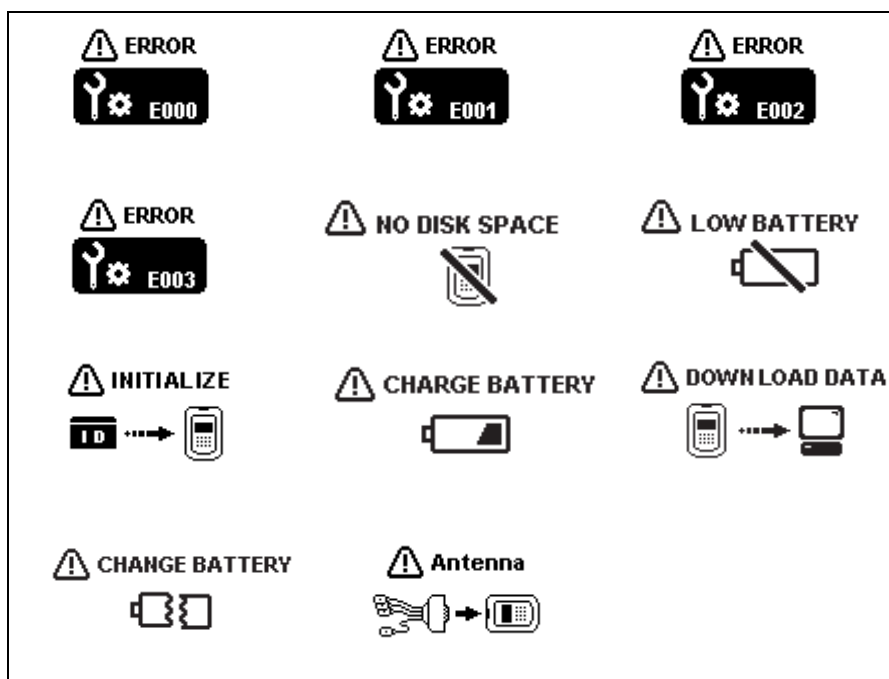


Figure 5.36

- If any of the icons shown in Figure 5.36 are displayed, refer to "Recorder unit error messages" on page 235, to evaluate and attempt to correct the problem

5. Check that the recorder unit is displaying information for the patient that is about to be examined.
6. Insert the recorder unit into the recorder unit pouch, with its display panel facing outward (see Figure 5.37).

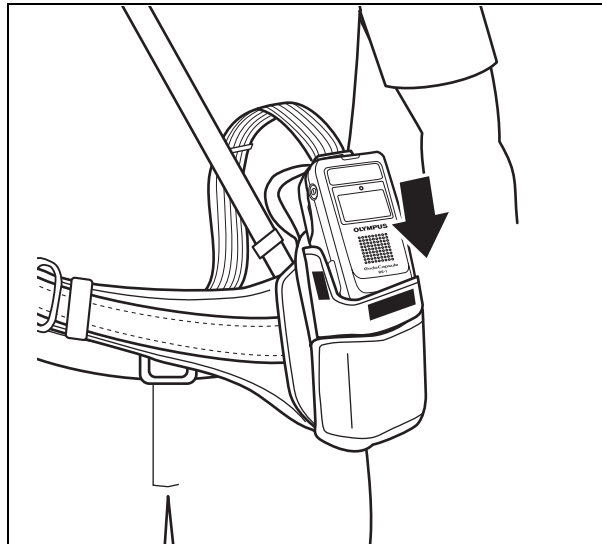


Figure 5.37

7. To secure the recorder unit to the pouch, close the pouch cover with the antenna cable passed through its side (or its center), then fasten the pouch cover with the Velcro straps (see Figure 5.38).

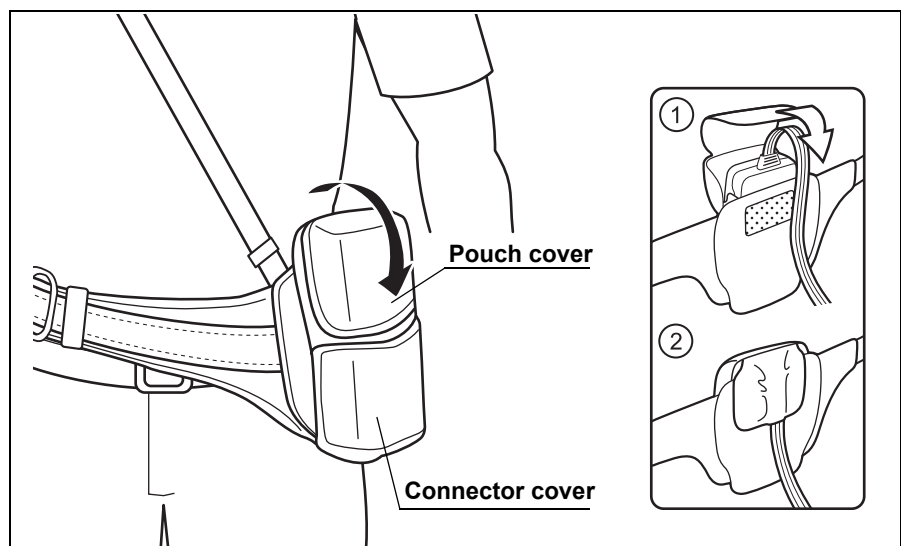


Figure 5.38

NOTE

- Adjust the length of the suspender and the belt to fit the patient.

- Ask the patient to adjust the position of the pouch when sitting down.
 - Show the patient how to loosen the recorder unit harness, for example, when using the bathroom.
 - The procedure for storing the recorder unit into the pouch is illustrated on the back side of the pouch cover.
8. Have the patient connect the buckle, and then pass the antenna lead set through from the inside to the outside of the belt.

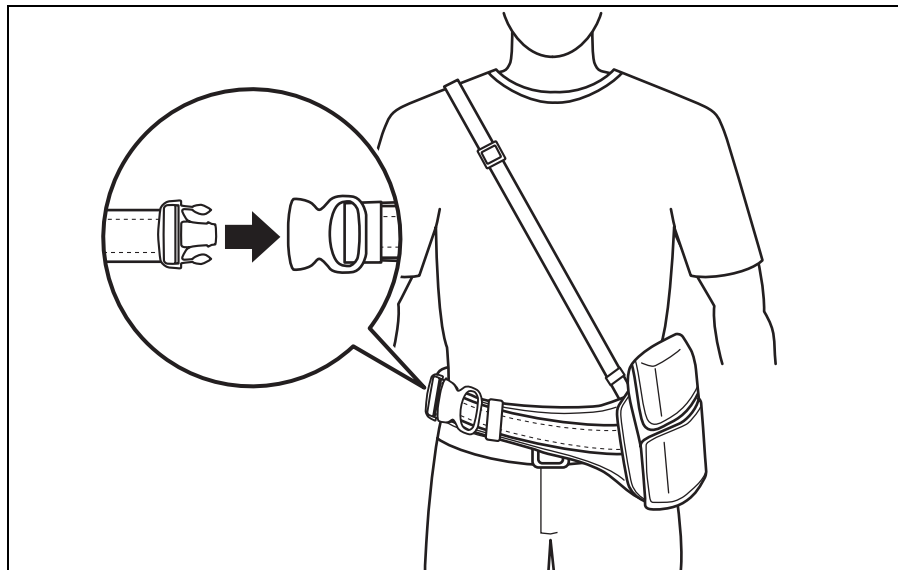


Figure 5.39

9. Remove the rubber caps from the real time viewer cable connectors on the recorder unit (accessible via the opening on the lower right side of the netted pocket) and on the real time viewer. Using the real time viewer cable, connect the real time viewer to the recorder unit, as shown in Figure 5.40.

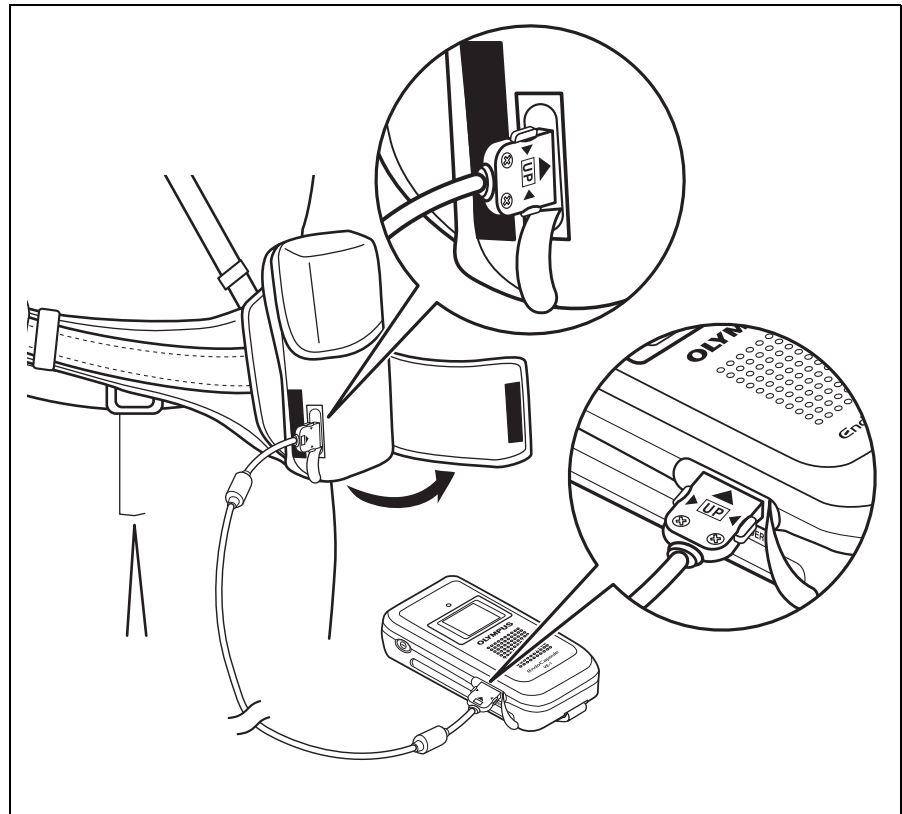



Figure 5.40

NOTE

If you have mistakenly inserted the recorder unit with its display panel facing inward, then the recorder unit's real time viewer cable connector can be accessed via the opening on the lower left side of the connector cover.

10. Hold down the real time viewer's power switch for at least 1 seconds to turn ON the real time viewer.

11. The real time viewer's display panel will display an icon () indicating the connection to the recorder unit, and the octagonal display will show "No RECORD".

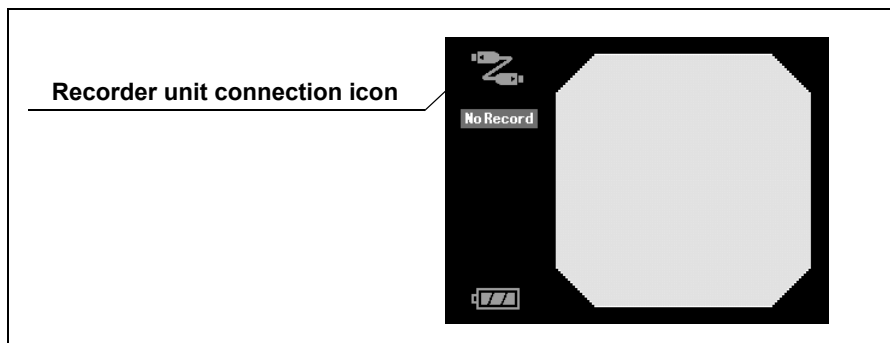


Figure 5.41

NOTE

- When signals from the capsule endoscope are not being received, or if the reception is poor, "NO RECORD" will be displayed to the left of the octagonal display, and endoscope images cannot be recorder by the recorder unit.
- On the upper left of the real time viewer's display panel, a receiver connection icon is displayed to indicate that the image is being transmitted from the recorder unit via the real time viewer cable (see Figure 5.41).
- When the real time viewer is receiving images directly from the capsule endoscope, the direct reception icon is displayed (see Figure 5.42).

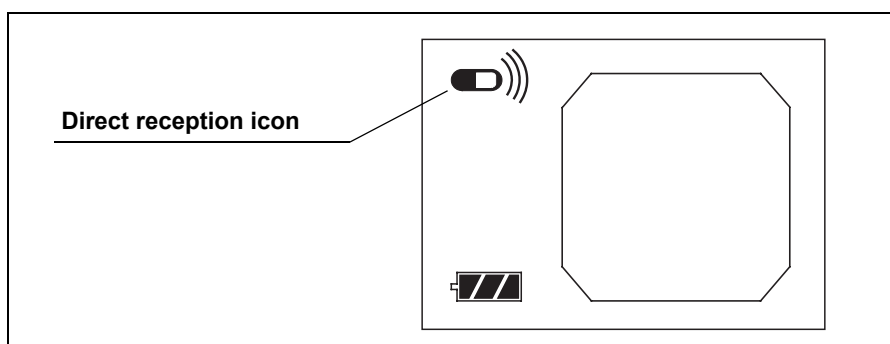


Figure 5.42

5.7 Preparing the capsule endoscope

WARNING

Do not use a capsule endoscope that have been dropped, bitten or been subjected to excessive pressure. Using such a capsule endoscope may result in infection of patient and/or medical personnel, as well as internal injury to the patient due to equipment damage.

CAUTION

- If the sterile container is open or damaged, the sterility of the capsule endoscope may have been compromised. Use a new capsule endoscope instead.
- To prevent the capsule endoscope battery from deteriorating, store the capsule endoscope under a temperature of 0 to 25°C (39 to 77°F). Do not store in a refrigerator or a freezer, as condensation may result.

NOTE

Clean the capsule activator with a cotton swab soaked in 70% ethyl or isopropyl alcohol.

Turning power ON

1. Slowly remove the sealing paper and take care that the capsule endoscope does not fall out of the container.

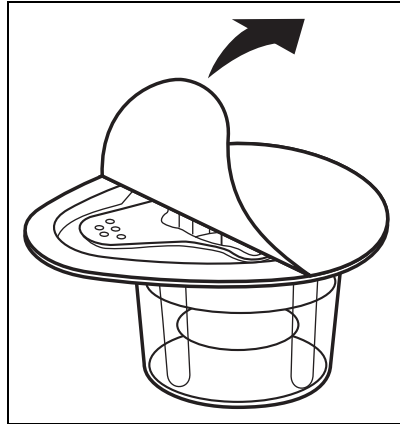


Figure 5.43

2. Hold the sterile container, taking care not to squeeze it. Adjust the direction of the boss of the capsule activator to the closest groove to the handle of the inner lid of sterile container. Then insert the capsule activator straight along with the groove, the capsule endoscope turn ON (see Figure 5.44). When the capsule endoscope is turned ON, the LED illuminates.

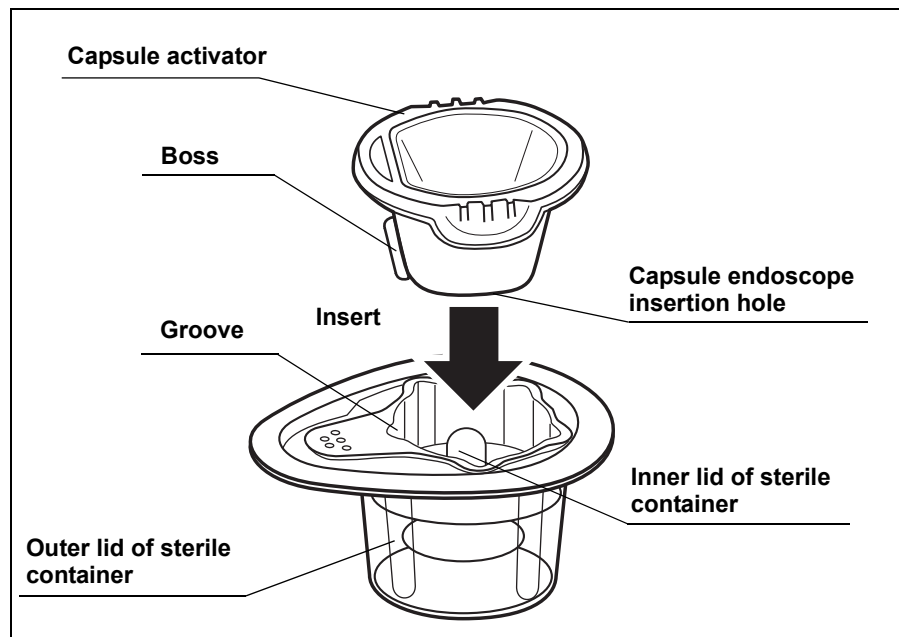


Figure 5.44

CAUTION

- The capsule activator is not sterilized. Do not allow the capsule endoscope to touch the activator.
- Keep the capsule endoscope away from magnets. Magnets can turn the capsule endoscope ON, resulting in the consumption of battery power.
- Do not look directly at the capsule endoscope's LED for a prolonged duration. It may cause an afterimage.

NOTE

Inserting the capsule activator again will turn the capsule endoscope OFF.

Confirming image

NOTE

To avoid unnecessary consumption of battery power, once the capsule endoscope has been turned ON, perform the image confirmation quickly.

1. Bring the capsule endoscope in the sterile container close to an antenna of the antenna lead set and confirm that the images captured by the capsule endoscope are displayed on the real time viewer's display panel. Also confirm that the recorder unit's display lamp blinks green simultaneously with the transmission.

CAUTION

- Do not let the patient ingest the capsule endoscope until you confirm the green blinking of the recorder unit's indicator lamp. Failure to do so may interfere with the examination.
- If the capsule endoscope images are not displayed, remove the viewer cable from the real time viewer, and check if images can be displayed via direct reception by the real time viewer. If images are still not displayed, try using a different capsule endoscope.

NOTE

You can check for proper operation of the equipment by periodically inspecting the status of the indicator lamp.

2. Disconnect the real time viewer cable from the recorder unit, close the rubber cap for the viewer cable connector, and close the connector cover.

5.8 Starting the examination

Instruct the patient to follow the cautions for Capsule Endoscopy Patients in the Capsule Endoscope Set A.

Also instruct the patient to return to the hospital 8 hours after the beginning of the examination.

Dispensing

WARNING

Do not use a capsule endoscope that has been dropped, bitten or subjected to excessive pressure. Using such endoscopes may result in internal injury to the patient due to equipment damage.

CAUTION

- The capsule endoscope should only be ingested with water. Use of other liquids may interfere with the examination.
- Avoid touching the top cover (LED side) of the capsule endoscope. Do not wipe with gauze or other cloths.

1. Prepare a glass of water.
2. Remove the inner case, and hand it to the patient.
3. Confirm that the capsule endoscope's LED is blinking.
4. Instruct the patient to take the capsule endoscope out of the inner case and ingest it with a sip of water, and not to bite the capsule.

Confirming passage

Using the real time viewer, confirm that the capsule endoscope has passed the stomach and entered the duodenum. Prolonged delay of the passage may result in the examination ending prematurely due to low battery.

NOTE

- In general, the capsule endoscope reaches the duodenum about 2 hours after ingesting the capsule endoscope, though this time may vary from patient to patient.
- The duration of the capsule endoscope's presence within the stomach varies from patient to patient. For this reason, you may not be able to capture images for the entire small intestine.

5.9 During the examination

Familiarize the patient with the following dangers, warnings and cautions.

DANGER

The capsule endoscope contains metal parts. While the capsule endoscope is in your body, stay away from equipment (i.e. MRI equipment) for which wearing of metallic objects is prohibited.

WARNING

Immediately consult a physician if abdominal pain, discomfort, or nausea is experienced after the patient ingests the capsule endoscope. If treatment is delayed, it may result in injury to the body cavity.

CAUTION

- With allergic patients, reddening or irritation of the skin may be caused by the adhesive on the antenna lead cover.
- Do not remove the antenna lead set or the recorder unit harness until the examination is completed. Failure to follow instructions may interfere with the examination.
- Do not turn the recorder unit OFF, remove the battery pack from the recorder unit, or disconnect the antenna lead set during the examination. Failure to follow instructions may interfere with the examination.
- During the examination, avoid pointing radio-transmitting devices (i.e. keyless entry, home security, waitress call system, garage door remote, wireless headphones, ham radio, etc.) at the antenna leads.

5.10 Ending the examination

Removing equipment

1. 8 hours after the start of the examination, check that the recorder unit's indicator lamp has stopped blinking, and end the examination.
If the indicator lamp is blinking, connect the real time viewer and determine whether to continue or stop the examination.
2. Take the recorder unit out of the storage pouch.

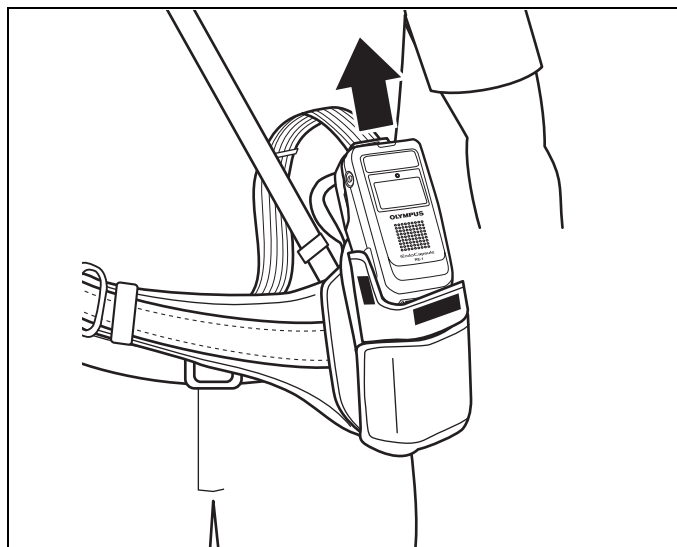


Figure 5.45

3. Hold down the recorder unit's power switch for 2 seconds or more to turn OFF the recorder unit, then disconnect the antenna lead set. Slide the antenna lead set eject button on the backside of the recorder unit, and disconnect the connection unit by sliding it in the direction of the arrow (see Figure 5.47).
Pull the battery pack removal ribbon to remove the battery pack (see Figure 5.48). Recharge the battery.

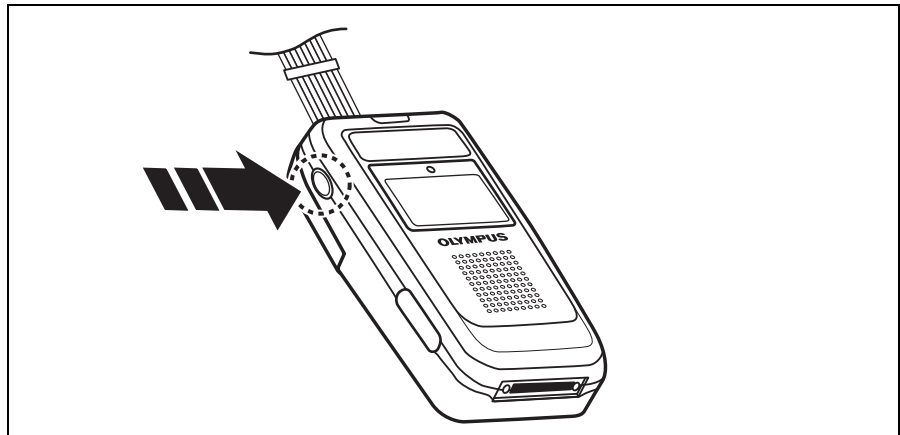


Figure 5.46

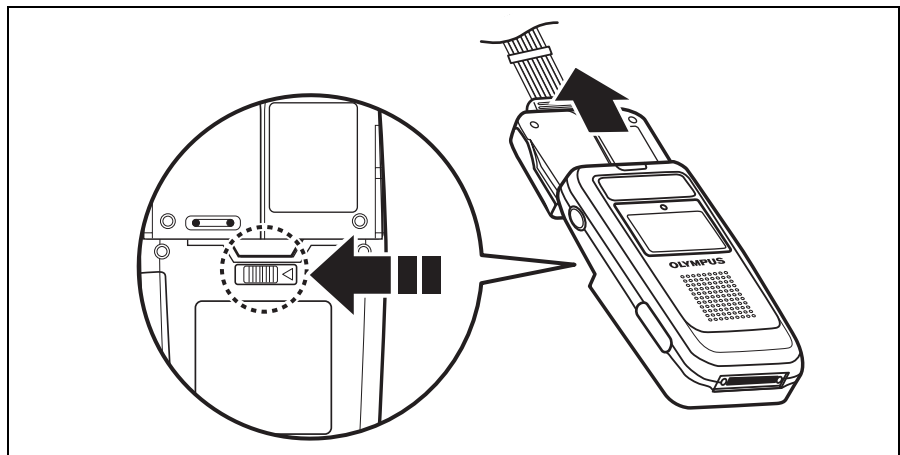


Figure 5.47

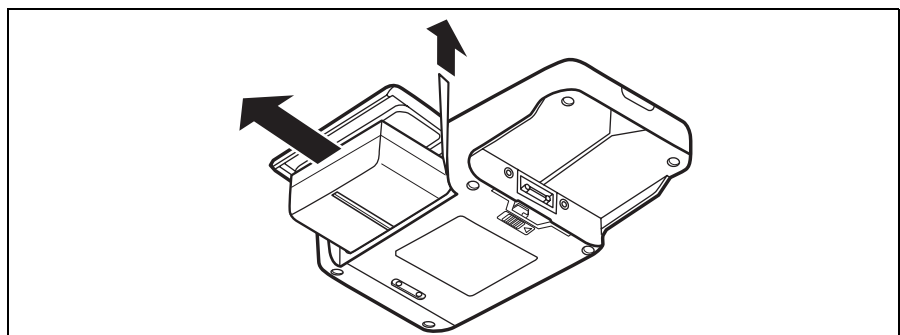


Figure 5.48

4. Remove the recorder unit harness from the patient.
5. Remove the antenna pads from the antenna lead cover.
The antenna lead cover can be easily removed by holding the tab and tearing the center section of the blue surface, down along the perforation (see Figure 5.49).
6. Carefully remove the antenna lead cover from the patient.

NOTE

The antenna lead cover are single-use only. Do not reuse them.

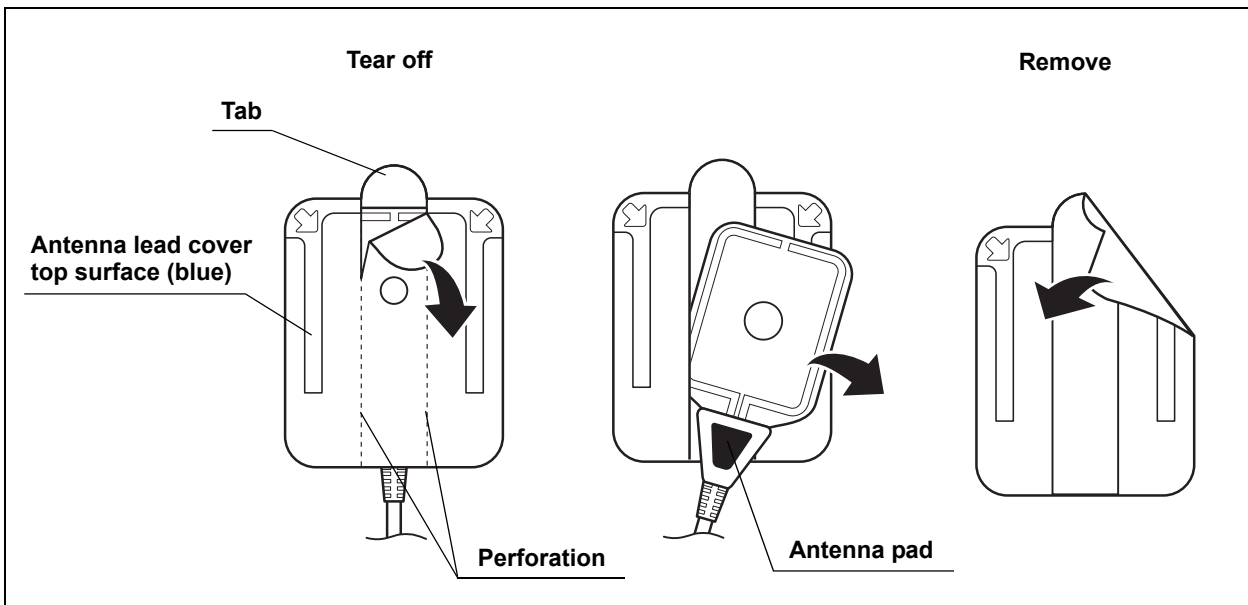


Figure 5.49

Downloading image data

NOTE

The “Download” function is not available in Endo Capsule Software Light.

Download the image data from the recorder unit to the workstation according to the following procedure:

CAUTION

- While downloading, do not remove the recorder unit from the cradle or turn OFF the workstation. Doing so may result in loss of image data.
- While downloading, do not unplug the recorder unit cradle’s power supply cable. Doing so may result in loss of image data.
- While downloading, do not turn OFF the recorder unit. Doing so will interrupt the download, and require you to start the download again from the beginning.
- While downloading, do not remove the recorder unit from the cradle or remove the cradle cable. Doing so may result in loss of image data. If you do so, connect the recorder to the workstation through the cradle and the cradle cable and restart the workstation before downloading again.
- If the antenna lead set being worn by a patient is connected to the recorder unit, do not connect the recorder unit to the cradle. Otherwise, the patient may experience an electric shock.

NOTE

- If the workstation cannot recognize the connected recorder(s), please remove the cradle cable from the workstation, restart the workstation and then connect it again.
- Do not remove the recorder unit from the cradle while downloading with two recorders connected whether the data is now set to it or not. Doing so may result in the hangup of the workstation. If the workstation does not work properly, please restart the workstation.

1. Check that the recorder unit cradle is connected to the workstation using the recorder unit cradle cable.
2. Turn ON the workstation and log in, as described in Chapter 4.

3. Remove the battery pack from the recorder unit and insert the recorder unit into the recorder unit cradle. The recorder unit will be turned ON automatically.
4. The patient's ID and name are displayed on the recorder unit's display panel (see Figure 5.50).



Figure 5.50

NOTE

If an error is detected on the recorder unit, the indicator lamp will blink yellow. To troubleshoot, refer to Chapter 8, "Troubleshooting" on page 233.

5. Click the [Recorder] button on the main screen. The recorder management screen is displayed (see Figure 5.51).

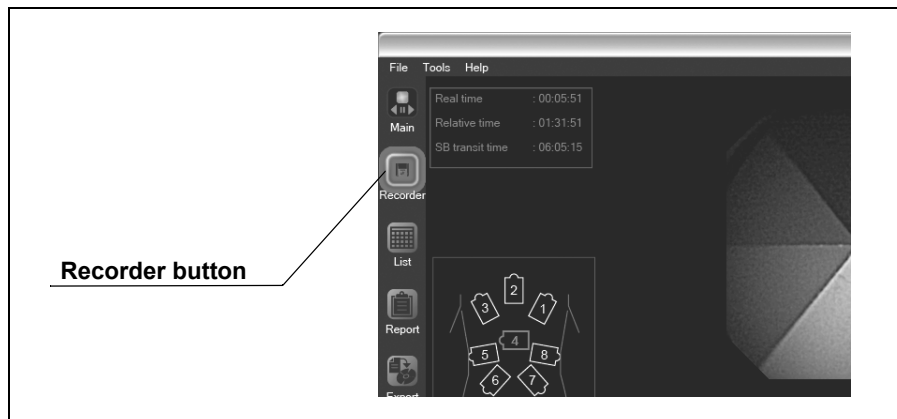


Figure 5.51

8. Check the checkbox for the recorder unit from which information is to be downloaded (see Figure 5.54).

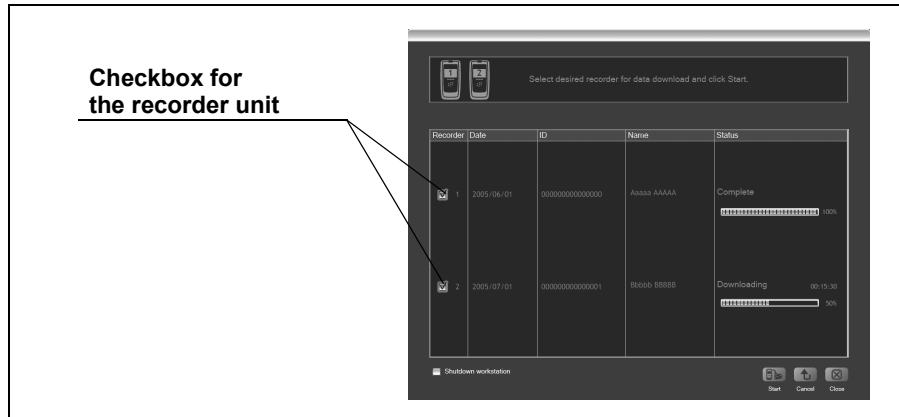


Figure 5.54

NOTE

If the “Shutdown workstation” checkbox is checked, the workstation will be turned OFF after the download is completed (see Figure 5.55).



Figure 5.55

9. Click the [Start] button. The image data download will start (see Figure 5.56). The download status is displayed after starting the download.

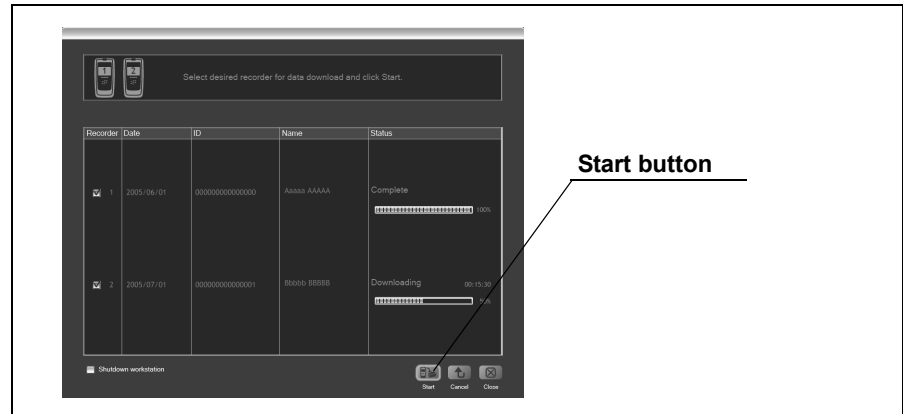


Figure 5.56

NOTE

- If you click the [Cancel] button during the download, the download will stop immediately. As it is not possible to continue a stopped download process, you will be required to start the downloading from the beginning again.
- While downloading the image data, the indicator lamp on the recorder unit turns from green illumination to yellow blinks (once every second). The recorder unit will be turned OFF when the download is completed.
- While downloading the image data, the icon in Figure 5.57 is displayed on the recorder unit's display panel.
- Remove the USB devices from the workstation and restart the workstation when it does not work properly. Then connect the removed USB devices again.

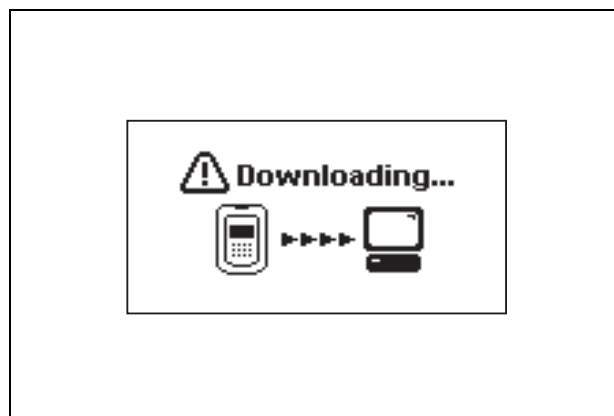


Figure 5.57

Removing the recorder unit

NOTE

The “Removing the Recorder Unit” function is not available in Endo Capsule Software Light.

1. On the recorder management screen, select the recorder unit you wish to remove (see Figure 5.60).

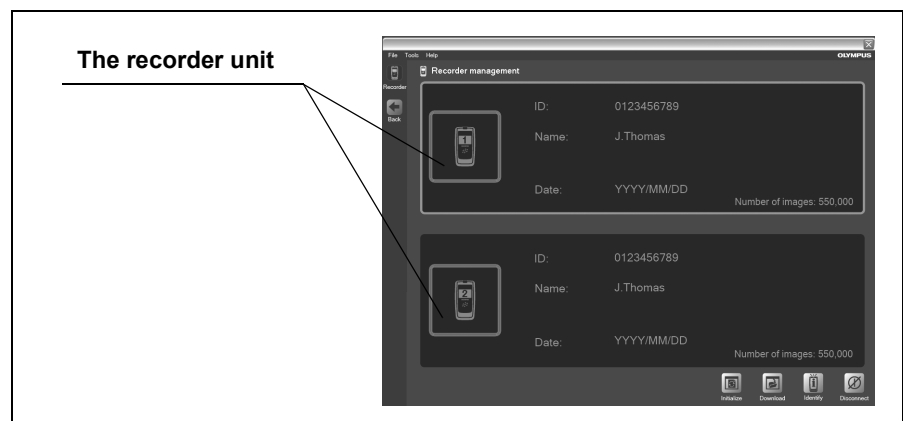


Figure 5.60

2. Click the [Disconnect] button (see Figure 5.61). The selected recorder unit is turned OFF.

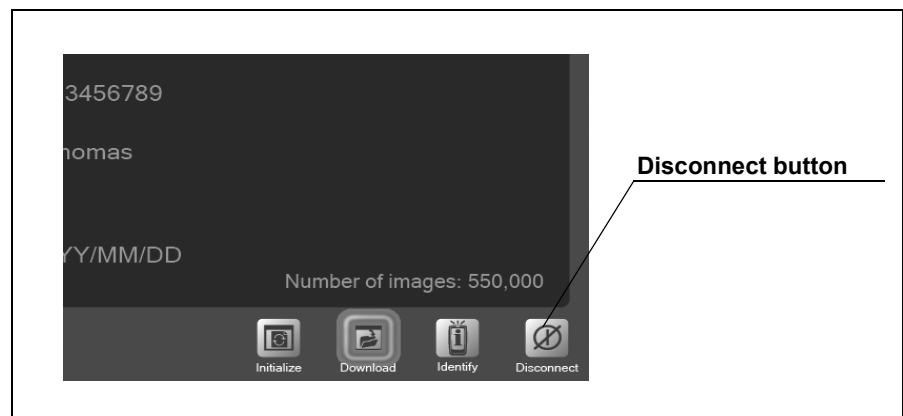


Figure 5.61

3. Remove the recorder unit from the recorder unit cradle.

Confirming excretion of the capsule endoscope

Familiarize the patient with the following “Caution for Capsule Endoscopy Patients”.

DANGER

The capsule endoscope contains metal parts. Instruct the patient to stay away from equipment (i.e. MRI equipment) for which wearing of metallic objects is prohibited while the capsule endoscope is in the patient's body.

WARNING

If the excretion of the capsule endoscope has not been confirmed, attempt to locate the capsule endoscope within the patient's body by X-ray examination.

1. The capsule endoscope will be excreted with the patient's feces.
2. Confirm that the capsule endoscope has been excreted.

Cleaning and storing the equipment

For instructions on cleaning and storing the equipment, refer to Chapter 7, “Care Storage and Disposal” on page 230.

Chapter 6 Capsule Endoscope Image Observation

Images captured by the capsule endoscope are downloaded from the recorder unit to the workstation for viewing.

CAUTION

- After viewing the images, prepare a back up onto a DVD to protect them from a hard disk failure.
- Do not change the file structure in the workstation. The files may become inaccessible.

NOTE

- The following DVD formats are supported:
DVD : DVD-R, DVD+R
- Remove the USB devices from the workstation and restart the workstation when it does not work properly. Then connect the removed USB devices again.

6.1 Main screen nomenclature and functions

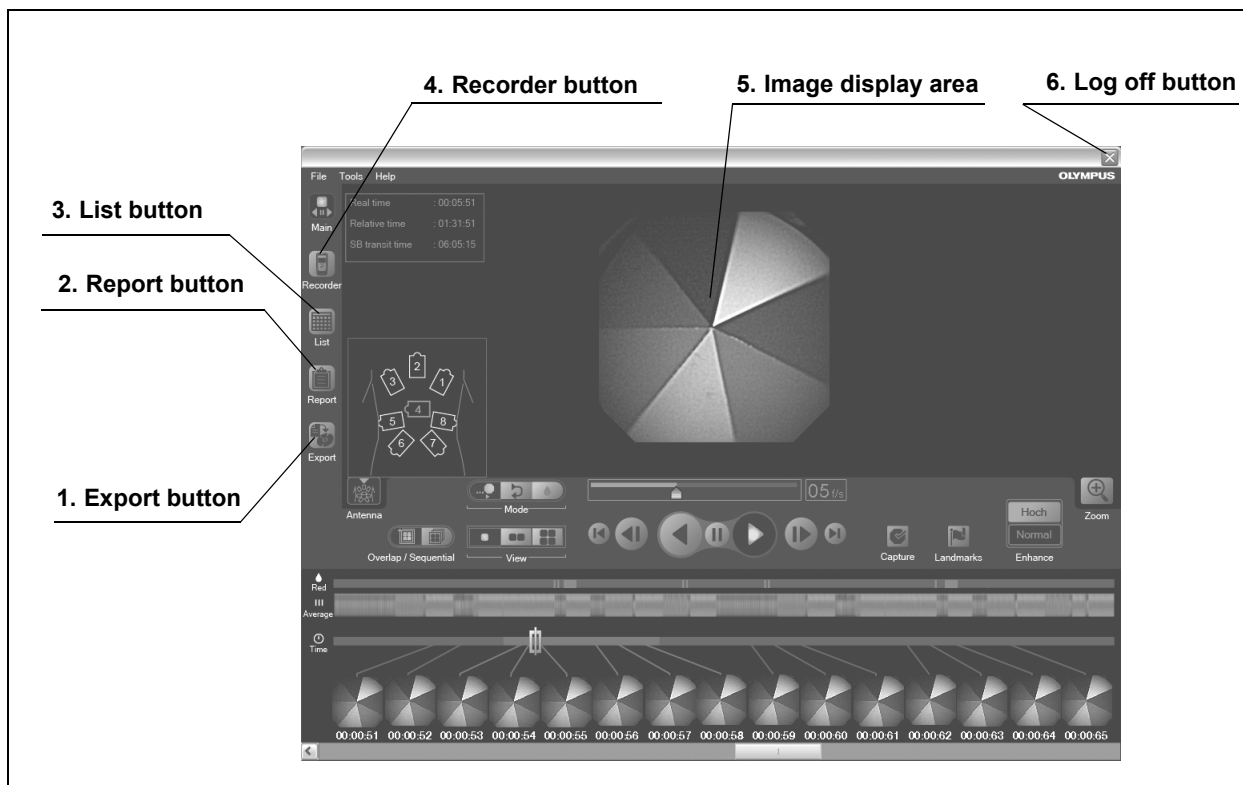


Figure 6.1

- 1. Export button**
Displays the data export screen.
- 2. Report button**
Displays the report screen.
- 3. List button**
Displays the examination list screen.
- 4. Recorder button**
Displays the recorder management screen.
- 5. Image display area**
Displays the image data.
- 6. Log off button**
Displays the login screen.

NOTE

“Report” button is not available when you open the examination data in the DVD. You can view the finalized report in the history screen by selecting “History” from the “Tools” menu on the main screen.

6.2 Opening data

CAUTION

If multiple capsules are included within examination data, the following warning message is displayed (see Figure 6.2). Check the previous and next thumbnails of “▼” mark on the time bar, and select an appropriate image to observe.

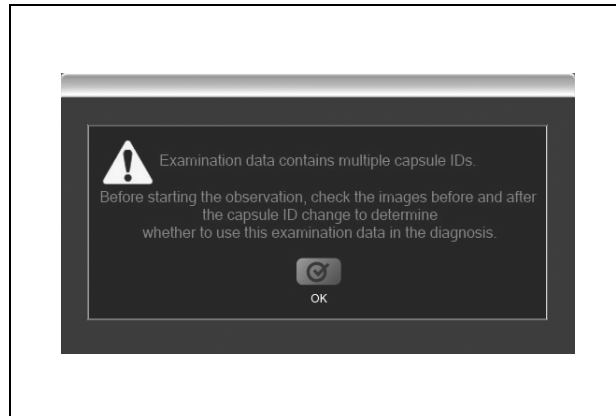


Figure 6.2

NOTE

- If the examination data is password-protected, the password input screen is displayed (see Figure 6.3). Enter the password for the examination data and click the [OK] button.

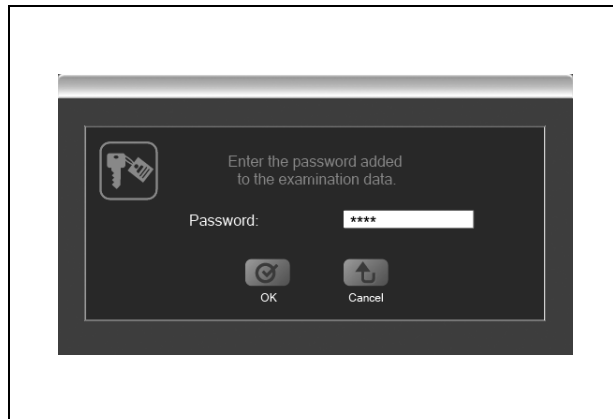


Figure 6.3

- When you open new examination data while another examination data is already open, the previous examination data is closed to allow the new examination data to open. If the thumbnail data is not saved, you will be asked if you wish to save the data.

Opening data in Endo Capsule software

○ Opening examination data and thumbnail data from the examination list screen

1. Click the [List] button on the main screen (see Figure 6.4). The examination list screen is displayed.

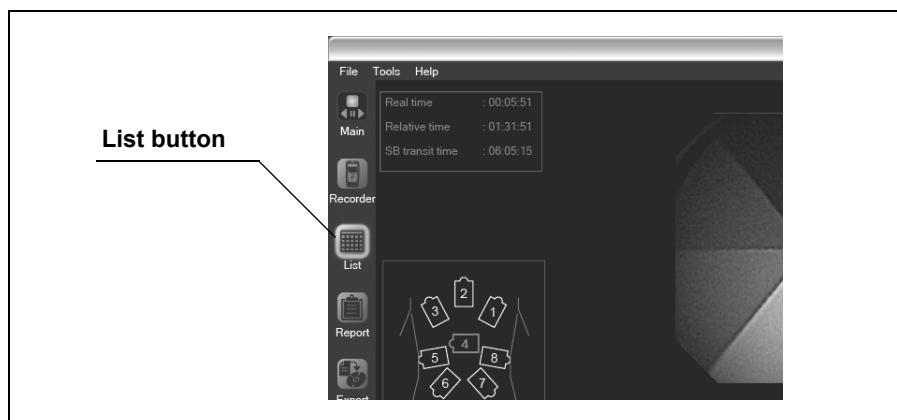


Figure 6.4

NOTE

Select “Open examination” or “Open thumbnails” from the “File” menu on the main screen. The examination list screen is displayed.

2. On the examination list screen, use the drive selection box to select the drive on which the examination data is stored (see Figure 6.5).

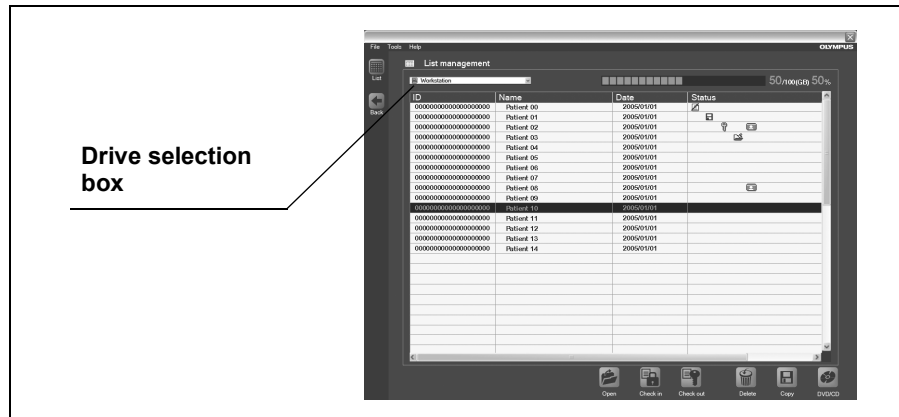


Figure 6.5

NOTE

To select examinations stored on the workstation, select workstation in the drive selection box.

3. Select the examination data from the examination list, and click the [Open] button (see Figure 6.6). The data open screen is displayed.

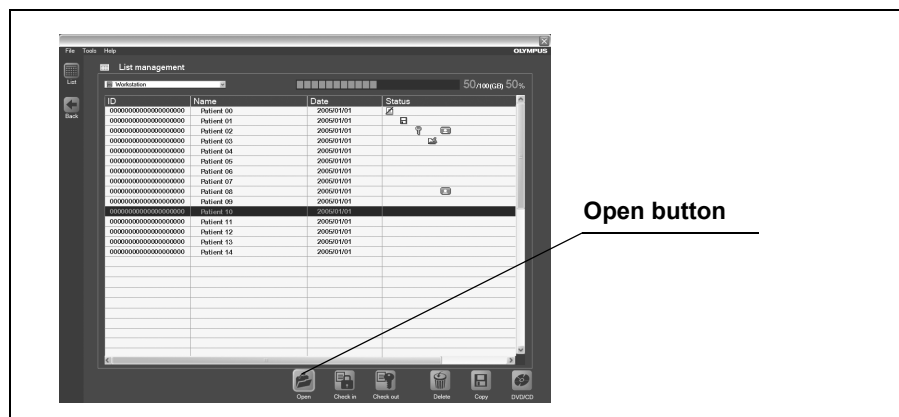


Figure 6.6

NOTE

Thumbnail data for the selected examination data is displayed in the thumbnail data list on the data open screen.

4. Select a thumbnail data, and click the [OK] button (see Figure 6.7). The main screen is displayed, and the examination data and thumbnail data are opened.



Figure 6.7

NOTE

To create a new thumbnail data, select "New" (top row) from the examination data list, and click the [OK] button (see Figure 6.8).

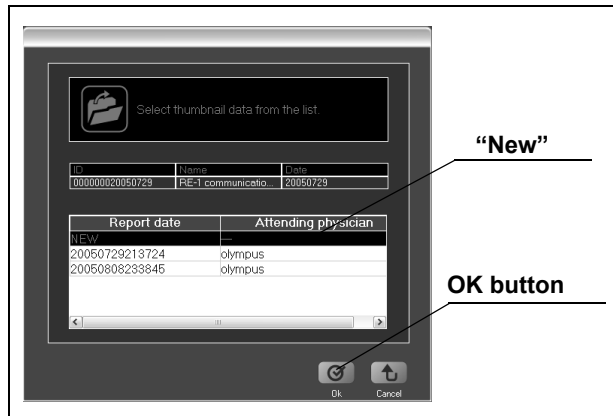


Figure 6.8

Opening data in Endo Capsule software light

○ Opening examination data from the menu

1. Select “Open examination” from the “File” menu on the main screen (see Figure 6.9). The file open screen is displayed.

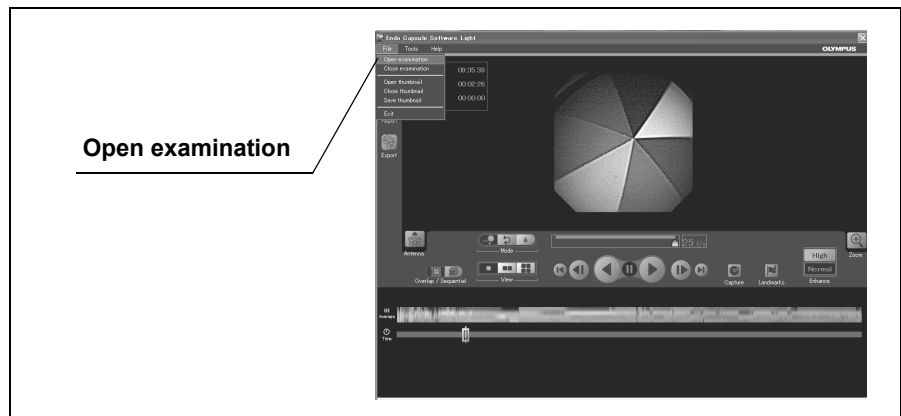


Figure 6.9

2. Select the folder in which the examination data is saved (see Figure 6.10).



Figure 6.10

3. Select the examination data (***.opg), and click the [Open] button (see Figure 6.11). The examination data is opened.

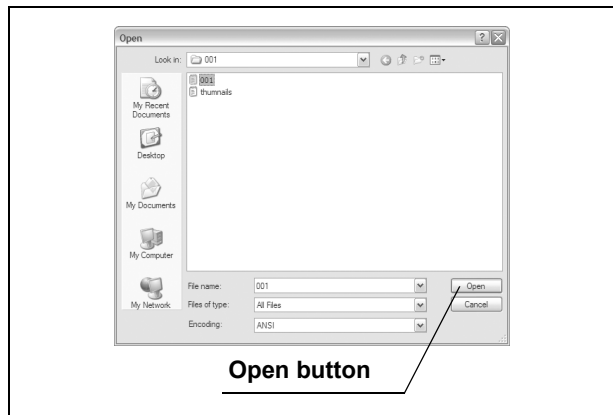


Figure 6.11

○ Opening thumbnail data from the menu

1. Select “Open thumbnails” from the “File” menu on the main screen (see Figure 6.12). The file open screen is displayed.

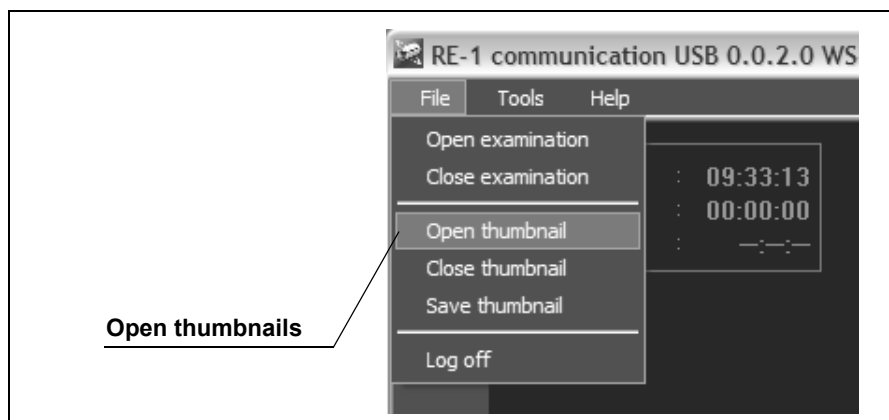


Figure 6.12

2. Select the folder in which the thumbnail data is saved (see Figure 6.13).



Figure 6.13

3. Select the thumbnail data (***.xml), and click the [Open] button (see Figure 6.14). The thumbnail data is opened.

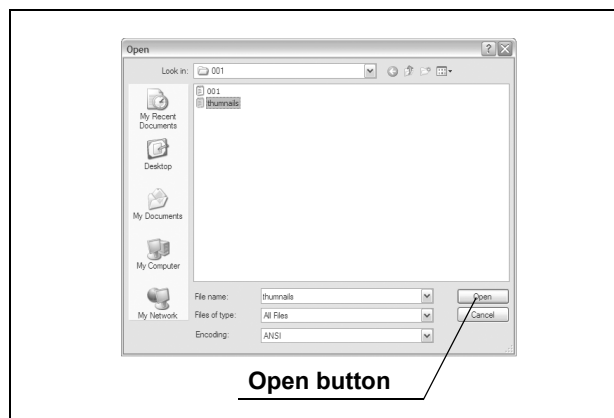


Figure 6.14

NOTE

If you open an examination data and a thumbnail data for different examinations, the following error message will be displayed. Select the thumbnail data for the same examination, or create new thumbnail data.

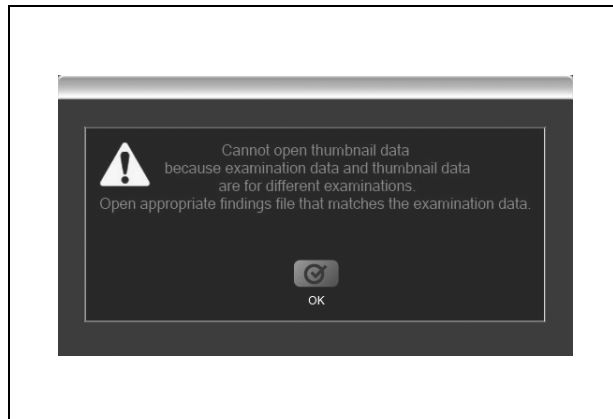


Figure 6.15

6.3 Image observation

Playing back images

To play back the image data, use the buttons in the image operation area (see Figure 6.16). The image data being played back is displayed in the image display area.

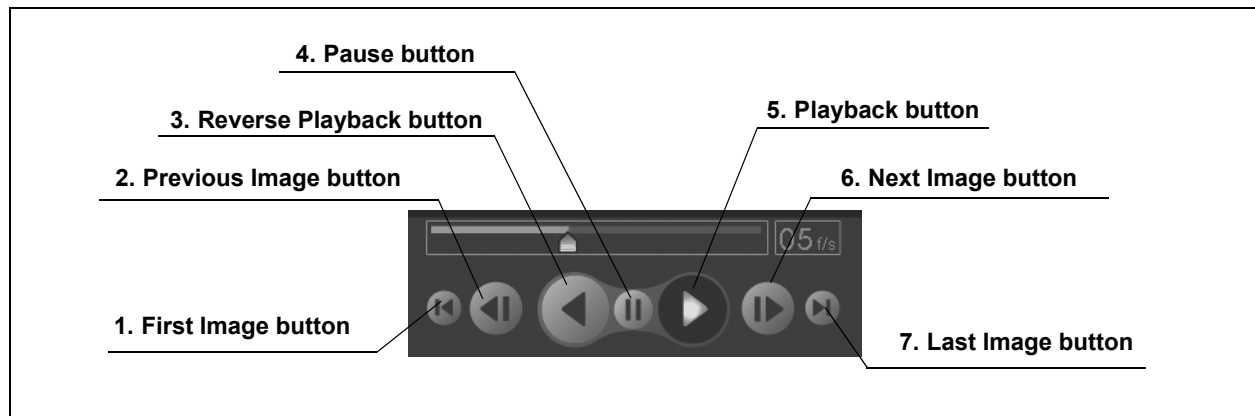


Figure 6.16

- 1. First Image button**
Displays the first image.
- 2. Previous Image button**
Displays the image that was captured before the currently displayed image.
- 3. Reverse Playback button**
Plays back the image data in reverse order.
- 4. Pause button**
Pauses the playback or reverse playback of the image data.
- 5. Playback button**
Plays back the image data.
- 6. Next Image button**
Displays the image that was captured after the currently displayed image.
- 7. Last Image button**
Displays the last image data.

Switching the playback mode

Use the playback mode switching button on the main screen to switch between playback modes (see Figure 6.17).

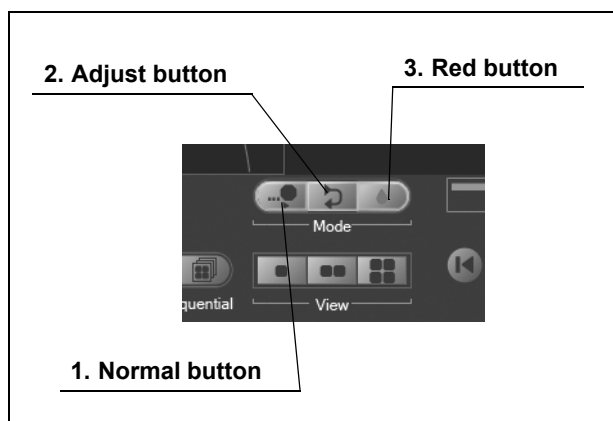


Figure 6.17

1. Normal button

Images are played back at the speed set by a user.

NOTE

The review speed is configurable (see “Changing the review speed” on page 157).

2. Adjust button

The review speed is automatically adjusted.

NOTE

Adjustment is automatically made so that the review speed is increased when there is less motion in the images.

3. Red button

The red color detection bar is displayed. Only the image data detected by the red color detection function is played back.

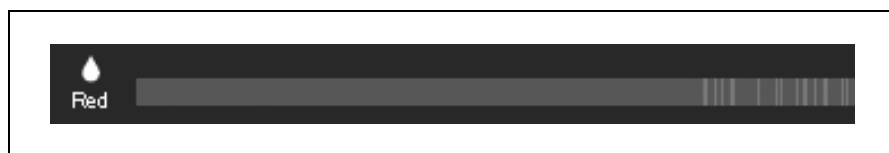


Figure 6.18

CAUTION

This function is provided as an aid for the diagnosis. Detection of lesions by this function alone is not guaranteed. Do not depend on this function for the diagnosis.

NOTE

- Red color detection is automatically performed while downloading the image data from the recorder unit.
- To display images before or after the image detected by the red color detection function, rotate a wheel of a mouse.

Changing the review speed

You can set the review speed for the image data using the speed setting bar in the image operation area on the main screen.

NOTE

The displayed review speed is approximated.

1. To set the review speed, drag the cursor on the speed setting bar with the mouse (see Figure 6.19).

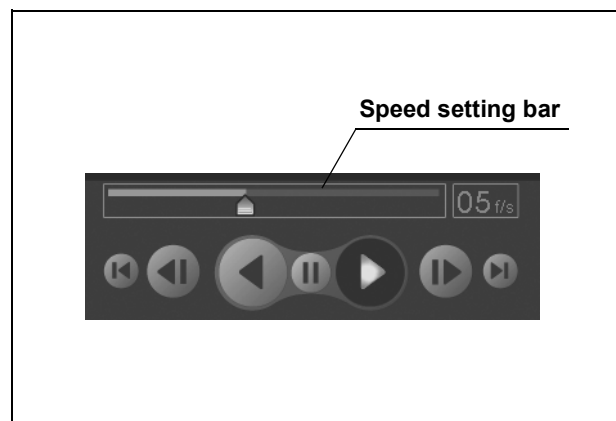


Figure 6.19

NOTE

- Move the cursor towards the right end of the speed setting bar to increase the review speed. Move the cursor towards the left end to decrease the review speed.
- The review speed is displayed in the speed setting display as the number of images displayed per second (see Figure 6.20).

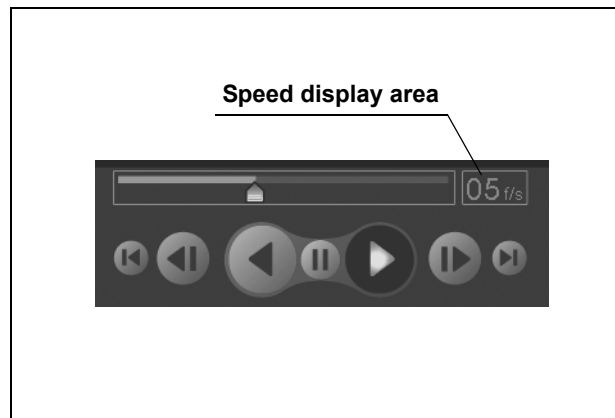


Figure 6.20

Multi display function

You can display 1, 2, or 4 images simultaneously. Use the image view buttons in the image display area to change the image view setting (see Figure 6.21).

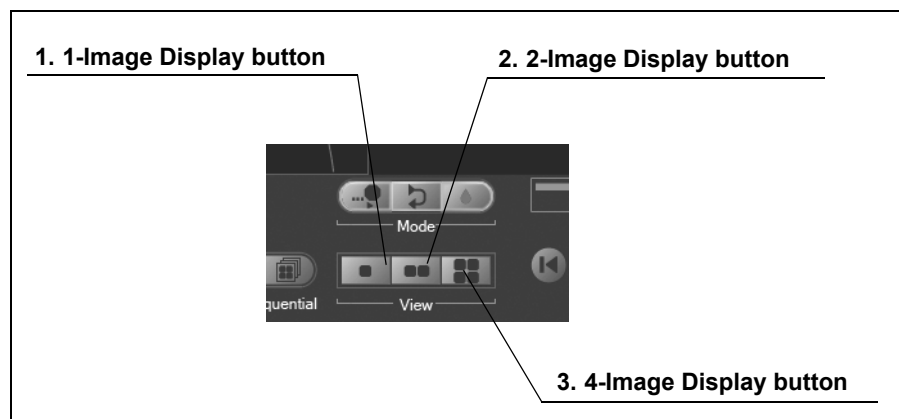


Figure 6.21

- 1. 1-Image Display button**
Sets the number of images to be displayed in the image display area to 1.
- 2. 2-Image Display button**
Sets the number of images to be displayed in the image display area to 2.
- 3. 4-Image Display button**
Sets the number of images to be displayed in the image display area to 4.

NOTE

- In the “2 Display Mode”, the image on the left side is 0.5 second older than the image on the right (see Figure 6.22).
- In the “4 Display Mode”, the images shown in the upper left, upper right, and lower right are 1.5, 1.0, and 0.5 second older than the image on the lower left, respectively (see Figure 6.22).

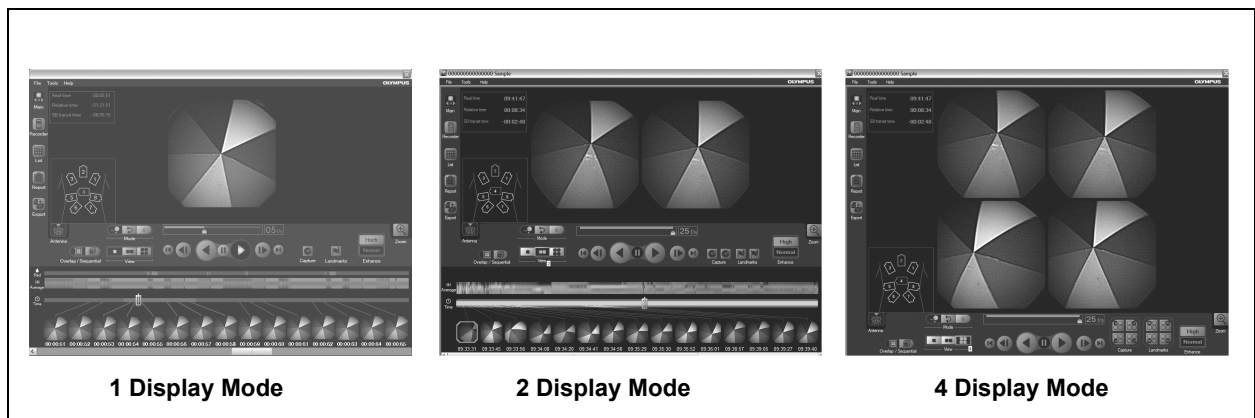


Figure 6.22

Switching the image update mode

You can select the way in which images on the main screen are refreshed.

1. Click either of the [Overlap / Sequential] buttons (see Figure 6.23).

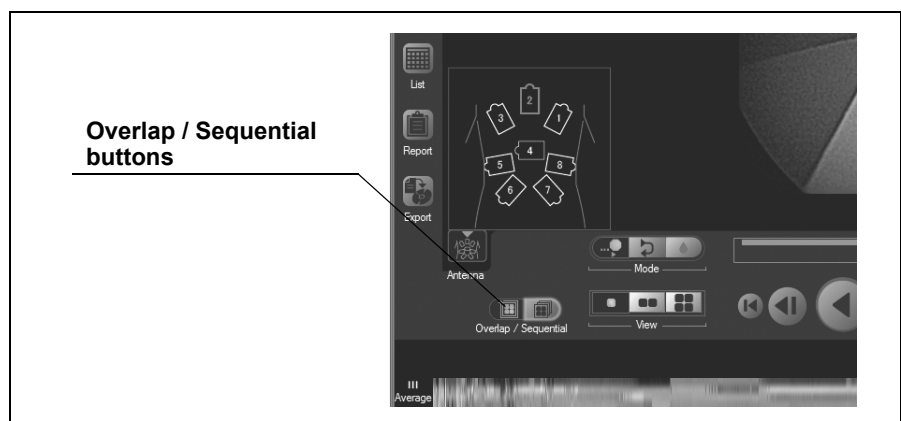


Figure 6.23